INTERACTIVE VIDEO FOR INTERPERSONAL SKILLS TRAINING[1]

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ABSTRACT

This new interpersonal skills training technology uses a videodisc player controlled by a microcomputer. The videodisc depicts a number of possible interactions between a new Army lieutenant and his subordinate which might occur when the lieutenant attempts to solve a problem such as deficient subordinate performance. The leadership trainee is first presented background information related to the problem. The trainee then sees and hears the subordinate's initial comment on the television monitor. A menu of possible responses the student might make follows on the TV screen and the trainee selects the one he feels is best by pointing to it with a light pen. The computer program causes the videodisc player to move to the point on the videodisc that depicts the way the subordinate might react if treated in that manner. The subordinate's reaction to a given response is designed to provide feedback about the quality of that response. One mode of instruction attempts to simulate an interpersonal interaction as closely as possible. Another adds additional feedback about the quality of each response, whether it is the best response, and the reason it is correct or incorrect. Initial reactions of individuals reviewing the first of eight videodiscs have been highly positive. An experimental evaluation of its training and assessment potential begins in November 1981.

INTRODUCTION

Background

Previous research at the Army Research Institute Field Unit at Fort Benning, Georgia, showed that a videodisc system could successfully train soldier technical skills even when only a fraction of the potential of the videodisc medium was used (Holmgren, Dyer, Hilligoss, & Heller, 1979). The current research and development effort at the field unit more fully exploits videodisc technology by providing simulations of leader-subordinate interactions for realistic training of interpersonal leadership skills. These videodisc scenarios will allow new Army leaders to practice interactions with simulated subordinates in situations which now are frequently mishandled in actual Army settings.

This videodisc interpersonal skills training and assessment (VISTA) project was initially conceived as a way to reduce the high personnel costs associated with use of assessment centers for assessing and developing leadership skills.

[1]This paper was also presented at the American Psychological Association Convention and the Society for Applied Learning Technology Convention.

The problem was one of simulating human beings in the many different ways that they might respond in a leadership interaction. An audiovisual medium was needed that would allow rapid accurate random access to a large number of motion sequences. This could not be accomplished satisfactorily prior to the advent of the videodisc.

Participants in the Project

Three Army agencies, a civilian contractor, and two Army television studios are working with the Army Research Institute in the development and evaluation of this new technology for interpersonal skills training. The Army agencies are the Training Developments Institute of the US Army Training and Doctrine Command at Fort Monroe, Virginia which is funding scenario development and evaluation; The Army Communicative Technology Office at Fort Eustis, Virginia which is providing equipment and videodisc mastering; and the US Army Infantry School at Fort Benning, Georgia which is providing leadership subject matter experts. The Litton Mellonics Systems Development Group at Fort Benning, Georgia is developing the leadership training scenarios, integrating the computer and videodisc hardware and developing the computer software. They will also carry out the experimental evaluation of the materials. Video production is being done primarily by the Fort Benning Educational Television Branch with some assistance from the Training and Audiovisual Support Center at Fort Gordon, Georgia.

COMPUTER-VIDEODISC TECHNOLOGY

Videodisc technology provides television displays which are much more flexible than those which come from videotape. Access from any one frame or sequence to any other frame or sequence is less than five seconds for the videodisc player we are using. Less distant segments on the disc can be reached and displayed in less than one second. In addition, during forward and reverse searches, the videodisc player is monitoring the frame number. As a result, the exact frame can be selected which corresponds to the beginning of a new motion sequence. Alternatively, the videodisc player can repeat that single frame over and over again for a static display. (This single frame feature would allow a slide-show of 54,000 separate pictures.)

The player can be interfaced to an external microcomputer. This allows computer controlled branching to different segments of the videodisc. It also makes it possible to present computer graphics on the video screen for increased instructional flexibility. In addition, a light pen or touch panel can be added to the system to permit the student to interact with the display. Finally, a real-time clock can be used to measure response latencies and use those latencies as cues for certain video segments.

Our system consists of an MCA PR-7820 videodisc player interfaced to an Apple-II computer (48K plus PASCAL language card) via a Colony Products VAI controller card. We also use a Symtec light pen and a Mountain Hardware real-time clock. All software is written in the programming language PASCAL.

LEADERSHIP TRAINING APPLICATION

Two different modes of instruction have been developed. The "experiential" mode will be discussed first followed by the "pedagogical" mode.

In the typical training situation, a new junior officer leadership trainee sits before a television receiver holding the "light pen" that allows direct interaction with the display. Typically, the television is first used to present some written background information to the trainee about a soldier who presents a leadership problem. This might be a new private in the platoon who has financial problems or an NCO who has been verbally abusing members of his squad. That individual then appears on the screen and is seen entering the lieutenant's office or approaching the lieutenant in the field setting. The televised subordinate typically begins the interaction, speaking directly to the viewer.

Following the background data and this initial comment by the simulated subordinate, the leadership trainee is shown a televised menu of possible responses that a new lieutenant might make in the situation. Each response was carefully chosen by scenario developers to appeal to at least some new leadership trainees. However, some of the responses are much more appropriate in the situation than others. The trainee reviews these alternative responses and points with the light pen to the one believed to be best. Immediately, the simulated subordinate reappears on the screen, behaving as he probably would if treated in the manner that was selected from the response menu. When this video segment depicting the simulated subordinate is complete, a new menu of responses for the trainee appears on the screen and the trainee selects a response for this updated situation with the light pen.

In this "experiential" mode of instruction, interactions continue between the leadership trainee and the simulated subordinate for as many as ten exchanges until the situation is resolved for better or worse. In the latter case, the simulated subordinate might be last seen on the TV bolting away from the lieutenant muttering about incompetent second lieutenants. Should the leadership trainee pause too long prior to responding, the computer would "know" this and would automatically display the simulated subordinate saying something like "If you are finished, Sir, I need to get back to the troops."

It is expected that these interactive scenarios with their rapid branching will cause trainees to react and respond to the subordinate depicted on the TV in much the same way as they would to a real subordinate. This approach to interpersonal skills training might provide a potent tool for training leader skills that unfortunately now are frequently learned only by trial and error on the job. In the instructional mode described above, the videodisc interactive scenarios will also provide trial-and-error learning, but the errors will not have serious negative consequences for the person the leader deals with or for the leader himself.

The second or "pedagogical" mode of instruction provides more feedback to the leadership trainee. In this mode, the student will first be asked to construct a response for a given leadership situation, by either writing it down or thinking it through. Next, the trainee is presented a response menu and

asked to select the response that is closest to the trainee's answer, or is the best alternative. After selecting an alternative, the student has the option of previewing the response. If this option is selected, the trainee is shown the model lieutenant (actor) making that response. This preview insures that the trainee is not tricked by verbal-behavioral discrepancies. If the student does not like the response, the program branches back to the response menu. After the leadership trainee decides to keep a response, the videodisc plays the response (camera on subordinate's face), and the trainee sees the subordinate's reactions during and after the statement. Following this motion sequence, computer-generated text informs the trainee whether or not the response selected was the best option and provides precise feedback about why it was correct or not. If the alternative selected was not the best choice, the trainee is again presented the response menu but with the incorrect alternative removed. If it was the best alternative, the student is given the option of viewing any or all of the wrong alternatives to see why they were less appropriate. When finished with the first choice point, the trainee is taken to the second choice with a brief video review to recreate the situation. In this pedagogical mode the trainee is never allowed to go more than one step off the "best path."

The same videodisc can be used for both the "experiential" and the "pedagogical" modes of instruction, because the computer software dictates the mode of instruction. Research is planned to establish the optimal means for combining these two modes of instruction.

PROGRESS AND PLANS

The initial videodisc scenario was completed in the Summer of 1981. All eight will be completed less than a year later. The scenarios will receive their initial validation in a leadership course for new Infantry lieutenants. However, they might be sufficiently general that they could be used for other Army Branches and possible leaders in other services.

The eight scenarios might also provide a powerful and inexpensive leadership assessment tool. All eight videodiscs will provide nearly 100 opportunities to measure quality of leader responses. Such assessment data could possibly be used to aid in selecting candidates for the Army's Branch Immaterial Officer Candidate Course (formerly OCS) or for the Military Academy. The procedure might also be used as a voluntary refresher course for more experienced Army leaders.

Future videodisc developments are anticipated for training the critical interpersonal skills of race-relations officers, chaplains, military police, and senior officers. Training of tactics and combined training of tactics and interpersonal leadership skills are also foreseen.

Reference

Holmgren, J. E.; Dyer, F. N.; Hilligoss, R. E. and Heller, F. H. The effectiveness of Army Training Extension Course lessons on videodisc. J. Educational Technology Systems, Vol. 8(3), 1979-80.

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